SN74S113N ECG-74S113

MFC6033A ECG 764

PRELIMINARY SERVICE MANUAL

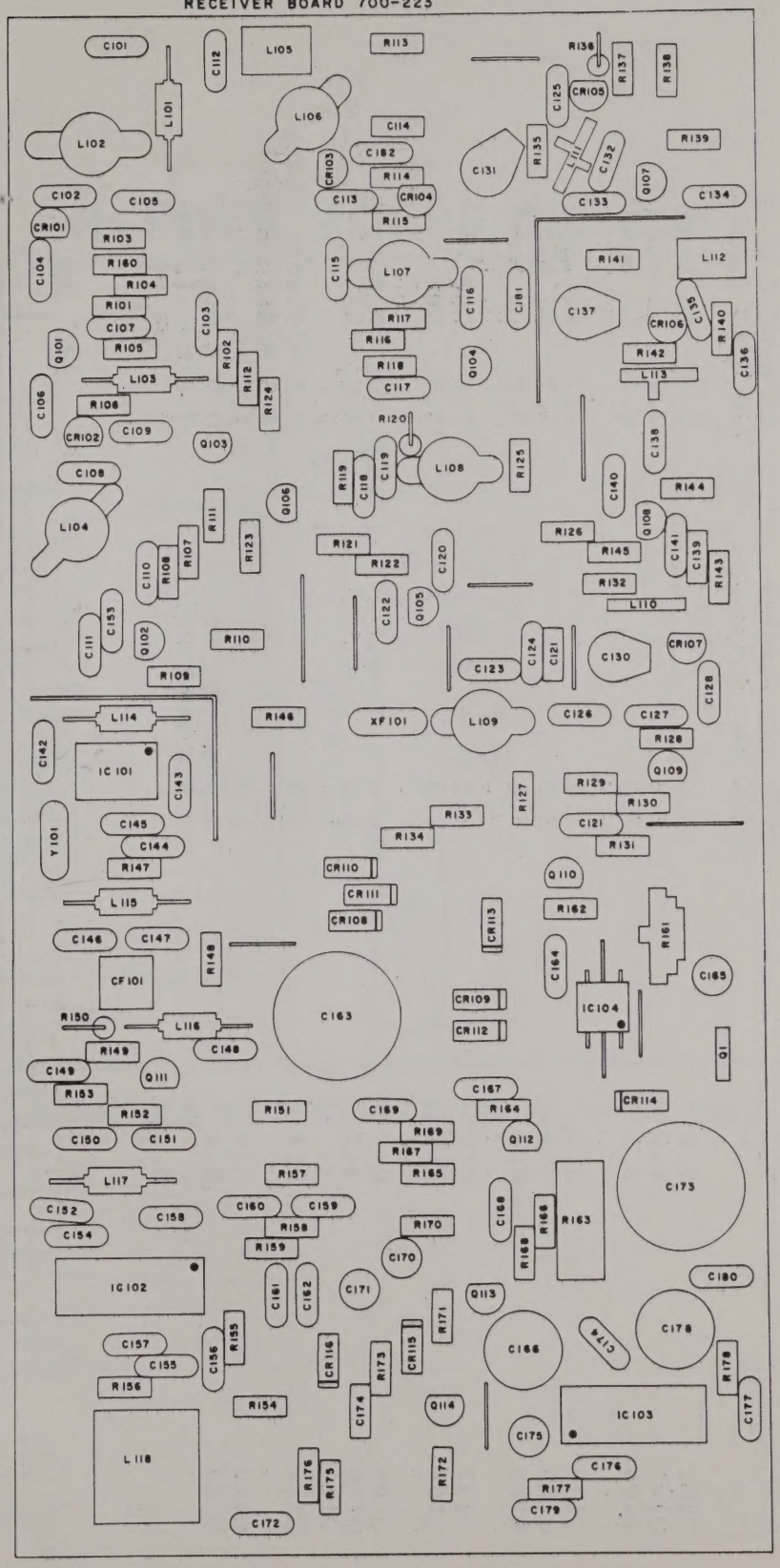
ACTION W 10

REGENCY ELECTRONICS INC.

7707 Records Street

Indianapolis, Indiana
46226

RECEIVER BOARD 700-223



ACT W 10 RECEIVER BOARD (700-223)

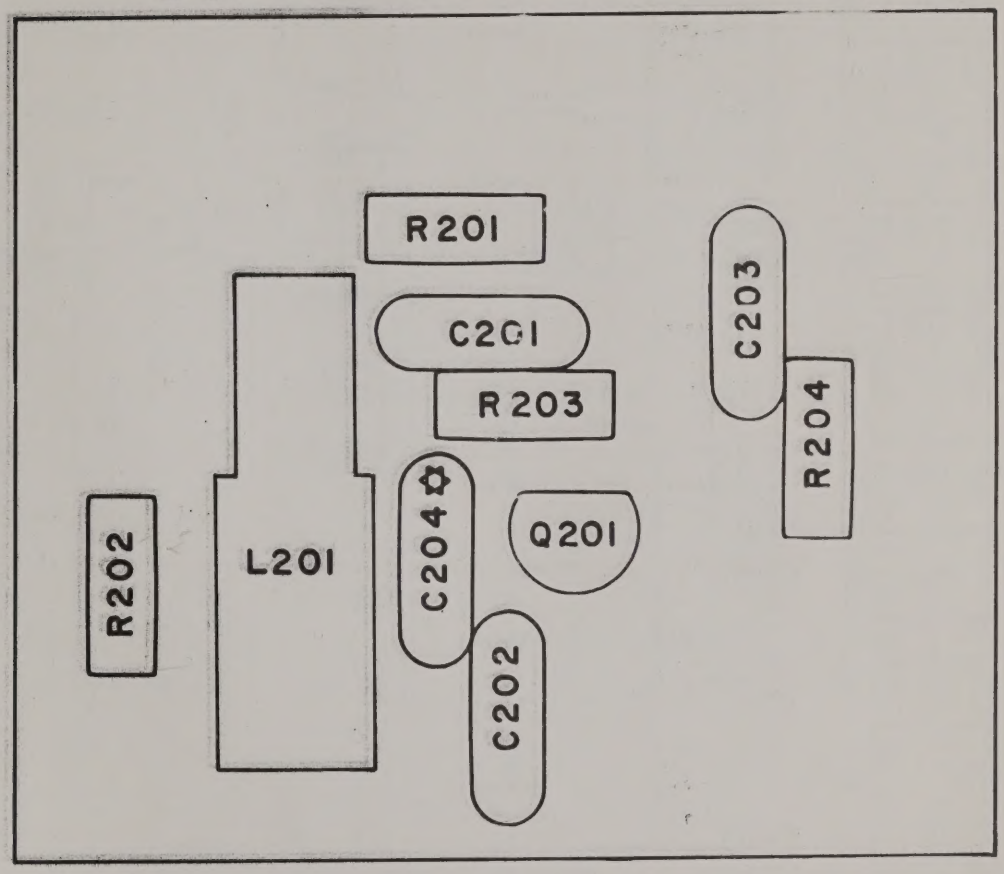
	E	B	C
Q 1	5.2	6.0 (AC Supply)	13 W/DC Supply 7.8 W/AC Supply
Q101	2.9	3.6	7.6 Lo Band
Q102	1.6	2.3	7.7 Lo Band
Q103	8.2	7.4	8.0 Lo Band
Q104	3.2	3.9	7.7 Hi Band
Q105	1.6	2.3	7.7 Hi Band
Q106	8.2	7.4	8.0 Hi Band
Q107	1.1	1.8	7.6 UHF
Q108	1.6	2.3	7.6 UHF
Q109	0	Frequency Dependent	Frequency Dependent
Q110	8.2	7.4	8.0
Q111	0.4	1.0	3.5 W/Strong Signal 4.5 W/Weak Signal
Q112	1.0	1.6	5.0
Q113	8.2	8.1 W/Open Sq. 8.3 W/Full Sq.	O V W/Open Sq. 7.8 W/Full Sq.
Q114	0		

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IC 101	4.1	.73	.73	4.1	7.6	0	4.1	7.6						
IC 102	3.6	3.4	0	1.4	1.4	1.4	0	0	0.2	1.4	2.8	3.4	7.6	4.3
IC 103	6.2	0	0	0	0	0	0	5.9	0	0	0	0	0	12
IC 104	0	12	6.0	5.5	7.3	4.3								

ACT W 10 (501-268) BUFFER BOARD

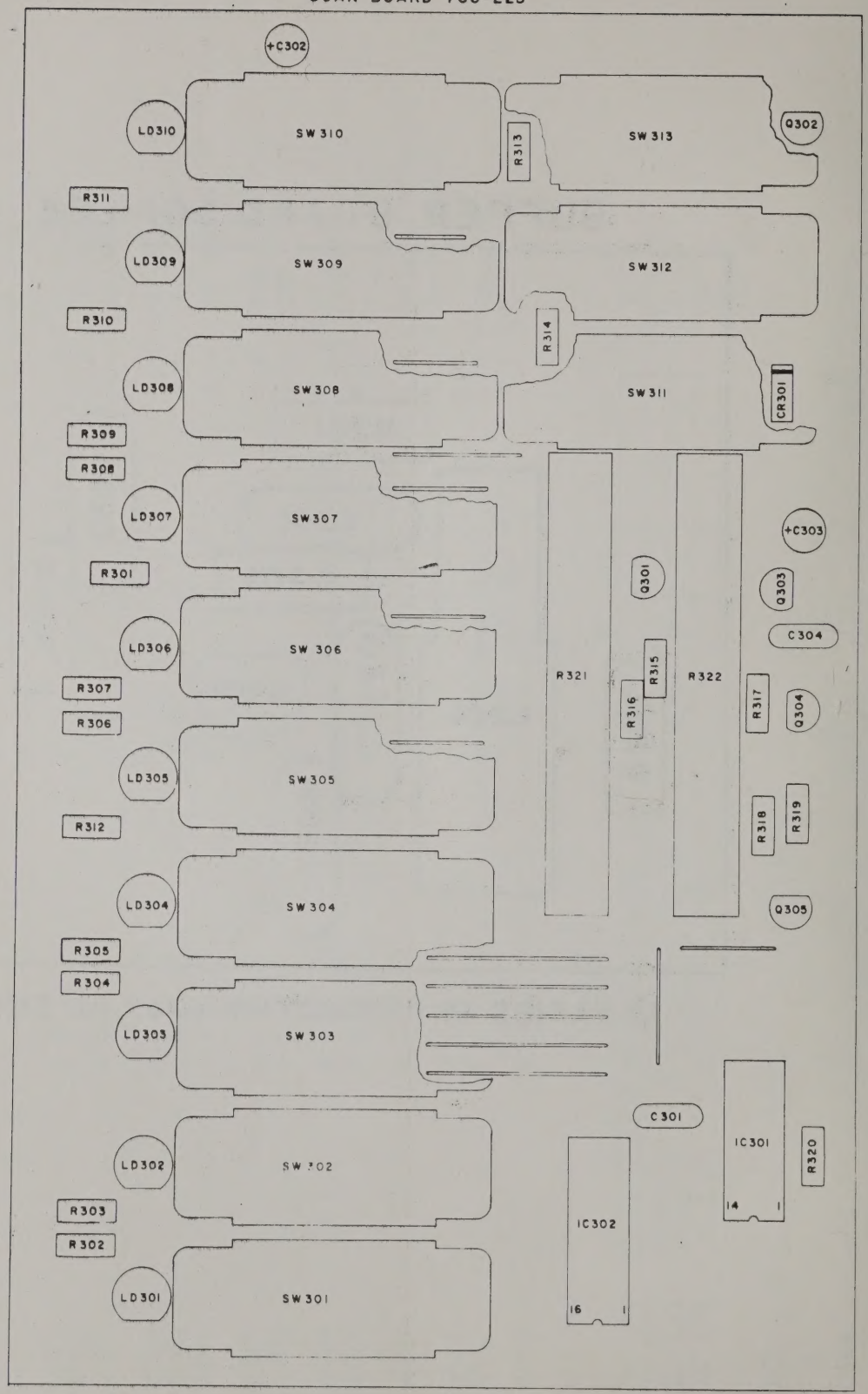
	E	B	C
Q201	0	0.7	5.7

BUFFER BOARD 501-268



✡ VARIES IN PRODUCTION (MAY BE OMITTED)

SCAN BOARD 700-225



ACT W 10 (700-225) SCAN BOARD

A) Scan switch in manual position; channel #1 selected.

	(Source) E	(Gate) B	(Drain) C
Q301	5.2	4.4	5.2
Q302	0	0.65	0
Q303	0.6	1.3	0.6
Q304	0.14	0.6	5.15
Q305	0	0	5.15

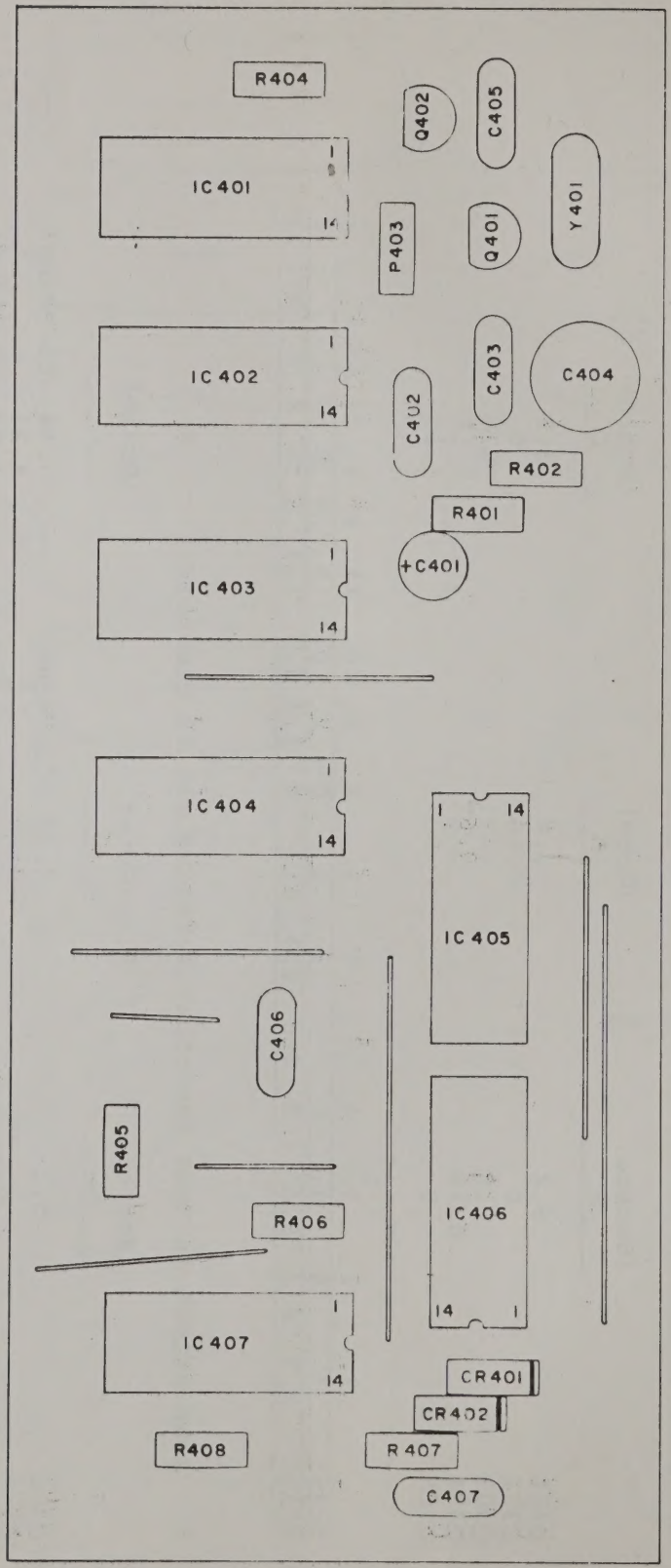
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC301	5	0	0	0	5	5	5	0	0	0	0	0	0	0		
IC302	0.2	4.3	0.6	4.3	4.3	4.3	4.3	0	4.3	4.3	4.3	0	0	0	0	5

B) Scan switch in scan position; scanning all 10 channels.

	(Source) E	(Gate) B	(Drain) C
Q301	5.2	4.36 (Clocking)	5.14 (Clocking)
Q302	0	0.04	4.27
Q303	3.77 (Clocking)	4.37 (Clocking)	3.77 (Clocking)
Q304	0.18 (Clocking)	3.77 (Clocking)	5.15 (Clocking)
Q305	0	0.11 (Clocking)	5.03 (Clocking)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC301	5.03	0	0	0	5.15	5.15	5.15	0-4 ck	0-4 ck	0	0-4 ck	0-4 ck	0	0-4 ck		
IC302	0-4 ck	0-4 ck	0-4 ck	0-4 ck	0-4 ck	0-4 ck	0-4 ck	0	0-4 ck	0-4 ck	0-4 ck	0-4 ck	0-4 ck	0-4 ck	0-4 ck	5.15

REFERENCE BOARD 700-228



REFERENCE BOARD (700-228) W 10

	E	B	C
Q401	1.62	1.40	OV
Q402	1.24	1.62	4.9

Voltages taken for UHF Operation (470 MHZ)

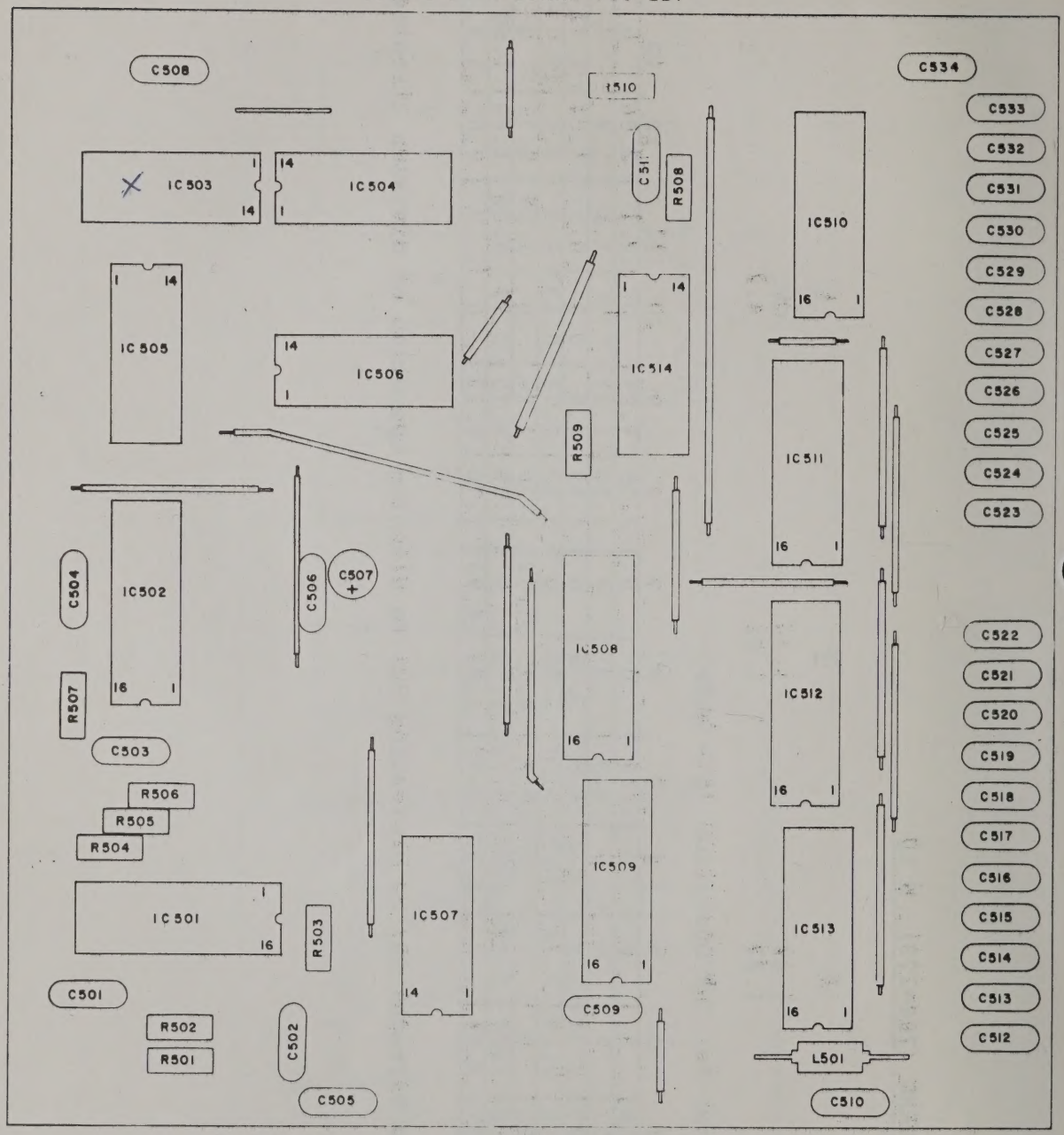
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
IC401*	1.24	0	0	0	4.9	0	0	2.05	1.95	0	2.1	2.06	0	2.1
IC402*	2.07	0	0	0	4.9	0	0	1.88	1.87	0	1.9	1.9	0	1.9
IC403*	1.93	0.14	1.9	0.1	1.9	3.72	0	1.88	4.9	0.1	0.1	1.93	1.92	4.9
IC404*	0.14	0.14	3.72	0.1	5.17	3.77	0	3.82	0.08	0.13	0.1	5.0	5.0	4.9
IC405*	1.92	0	0	0	4.9	0.09	3.72	1.28	1.28	0	1.29	0.71	0	1.29
IC406*	1.29	1.29	2.52	2.52	0.72	3.76	0	0.09	3.75	3.75	0.08	1.60	1.60	4.9
IC407*	3.57	3.82	0	4.90	0.72	3.82	4.90	3.76	0.13	0	0	0.08	4.9	4.9

* Indicated voltages may be misleading due to clocking operation of division circuits.

1 C-503

SN 745113

DIVIDE BY N BOARD 700-227



ACT W 10 DIVIDE BY "N" BOARD (700-227)

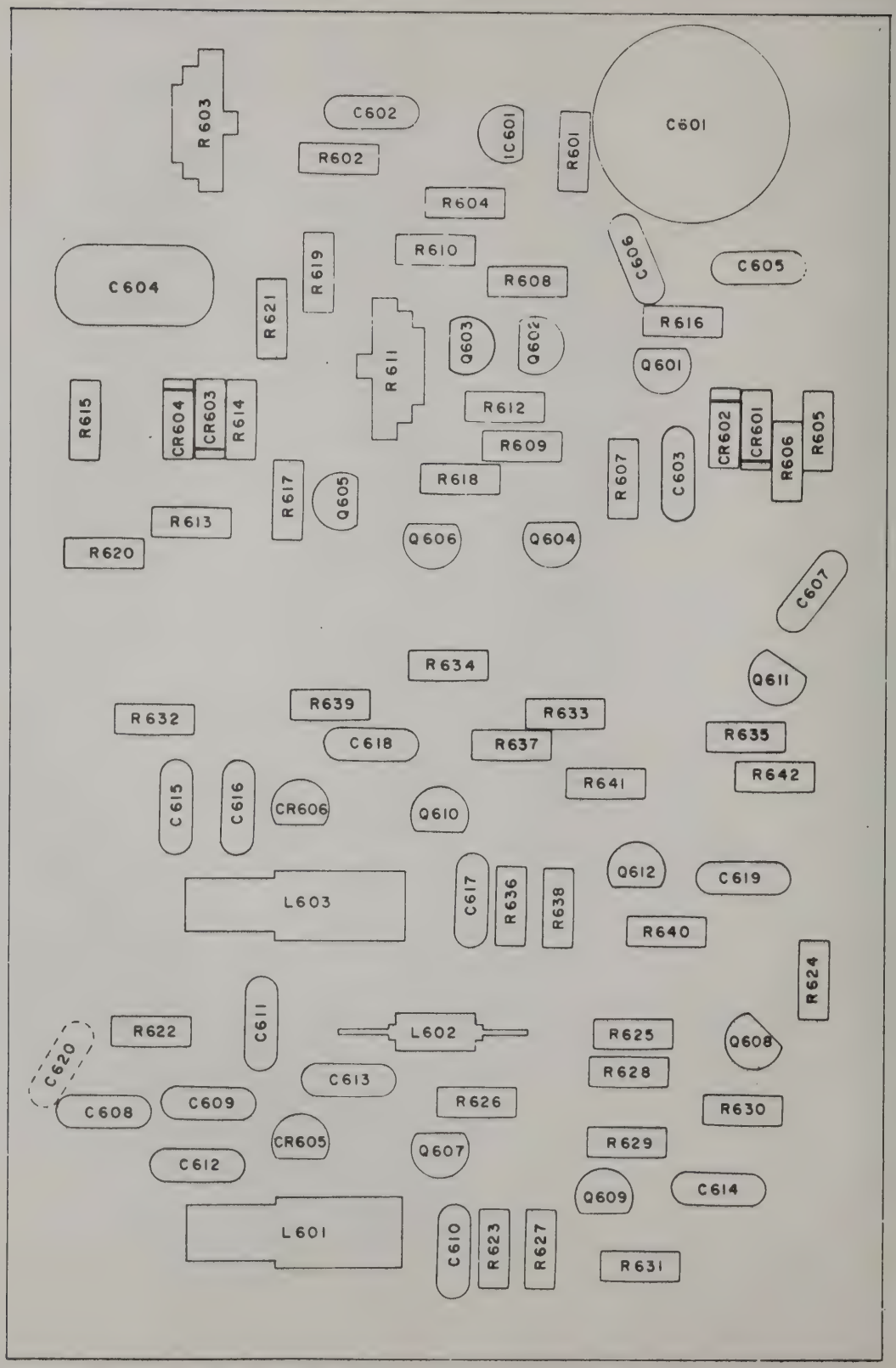
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
IC 501 *	4.9	3.9	3.45	3.36	3.44	3.24	4.01	0	0	3.3	3.3	3.26	3.26	3.45	3.39	4.50
IC 502 *	4.9	4.03	4.0	4.0	4.02	4.91	1.04	0	3.68	3.65	0	0	4.02	3.73	3.73	4.91
IC 503 *	1.05	4.90	4.90	4.90	1.95	1.95	0	2.24	2.23	4.99	1.95	1.95	1.06	4.90		
IC 504 *	1.50	0.24	0.42	0	3.61	0.17	0	2.44	2.37	4.95	1.08	1.08	1.10	4.90		
IC 505 *	1.96	2.24	3.14	3.66	3.66	0.59	0	3.56	0.20	0.84	4.55	1.24	0.59	4.90		
IC 506 *	3.15	3.15	1.08	1.08	2.34	3.68	0	3.53	0.33	0.33	0.33	3.78	3.85	4.90		
IC 507 *	3.45	0.37	0.33	0.33	3.77	0	0	3.52	0.14	0.37	3.65	3.65	0.40	4.91		
IC 508 *	4.91	4.67	3.77	5.04	5.11	0	0.40	0	3.56	4.91	3.89	3.85	3.78	3.77	3.87	4.91
IC 509 *	4.91	4.73	0.29	5.05	5.05	0.30	0.40	0	3.56	3.45	3.82	0.19	0.19	3.77	3.65	4.91
IC 510 *	4.91	4.70	0.31	0.31	0.28	0.30	4.91	0	3.56	4.91	0.84	1.54	1.56	2.04	0.51	4.91
IC 511 *	4.91	4.69	0.31	0.30	5.06	0.29	0.51	0	3.56	4.91	0.91	1.71	1.55	1.96	0.53	4.91
IC 512 *	4.91	4.73	5.06	0.29	5.03	0	0.46	0	3.56	0.56	1.73	2.23	1.75	2.21	0.21	4.91
IC 513 *	4.91	4.74	5.15	0	0	4.91	0.51	0	3.56	0.21	3.87	0.10	0.11	3.82	0.20	4.91
IC 514 (LC BAND)	0.56	0.56	4.92	4.92	5.17	0.10	0	3.53	0.09	0.09	5.17	4.92	0.45	4.91	(40 MHZ)	
IC 514 (HI BAND)	0.56	0.56	4.91	4.91	0.10	5.18	0	0.07	5.18	5.18	0.10	4.92	5.04	4.91	(160 MHZ)	
IC 514 (UHF)	4.99	4.99	0.14	0.14	5.15	5.19	0	0.07	5.18	5.18	5.15	0.15	5.04	4.91	(470 MHZ)	

* Indicated voltages may be misleading due to clocking operation of division circuits. Voltages taken with unit programmed to 470 MHZ.

Voltages for IC 514 taken at 40 MHZ, 160 MHZ, and 470 MHZ.

All Voltages taken using DFS-5K as programming device.

VCO BOARD (700-227)



NOTES:
1. C620 IS LOCATED ON COPPER SIDE OF BOARD.

ACT W 10 VCO BOARD (700-227) SHEET "A"

	(Source) E	(Gate) B	(Drain) C
Q 601	2.48	2.38	8.29
Q 602	2.98	2.49	0
Q 603	2.98	2.38	0.61
Q 604	O	0.6	0
Q 605	0.42	1.32	3.70
Q 606	0	0.6	4.43
Q 607	2.36	0	7.89
Q 608	O	0.7	0.03
Q 609	1.58	2.32	7.29
Q 610	7.90	0	4.28
Q 611	O	0.07	4.29
Q 612	1.65	2.36	7.51
	1	2	3
IC 601	11.66	8.9	3.92

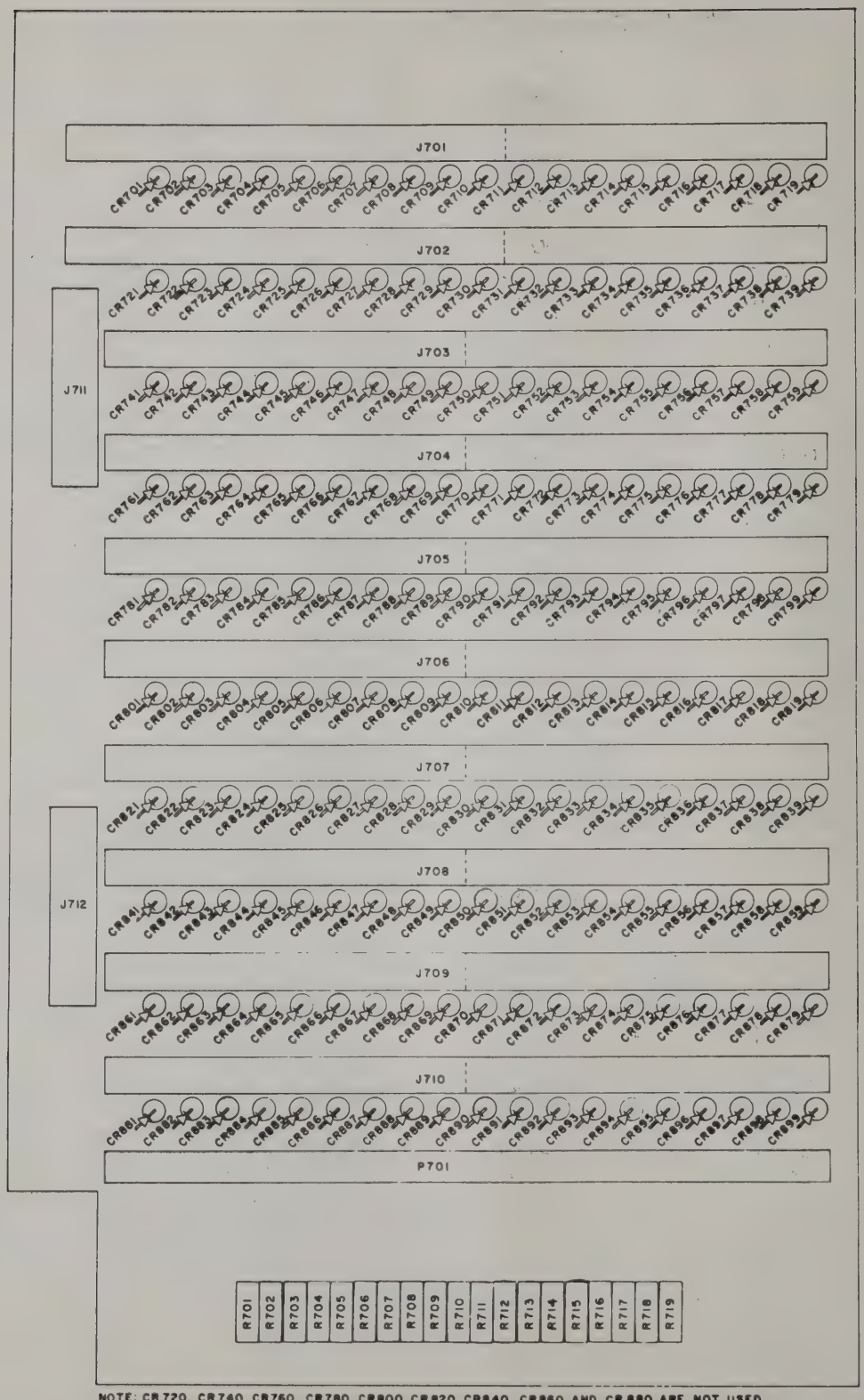
Voltages taken with unit programmed to 470 MHZ.

ACT W 10 VCO BOARD (700-227)

	(Source) E	(Gate) B	(Drain) C
Q601	2.47	2.39	8.29
Q602	3.00	2.48	0
Q603	3.00	2.38	0.63
Q604	0	0.60	0
Q605	0.29	0.91	5.36
Q606	0	0.63	3.33
Q607	3.75	0	7.75
Q608	0	0.06	3.70
Q609	1.52	2.26	7.13
Q610	7.95	0	3.05
Q611	0	0.72	0.06
Q612	2.33	2.96	7.06
	1	2	3
IC601	11.34	8.9	3.9

Voltages taken with unit programmed to 40 MHZ.

MATRIX BOARD 700-224



NOTE: CR720, CR740, CR760, CR780, CR800, CR820, CR840, CR860 AND CR880 ARE NOT USED.

ACT-W10 PARTS LIST

RECEIVER BOARD

Item No.	Description	Part No.
	Transistors	
Q1	NPN	4802-0000-002
Q101, 102, 104, Q105, 107, 108, Q109	NPN (Red Top)	4801-0000-035
Q103, 106, 110, Q113	PNP (White Top)	4801-0000-060
Q111, 112, 114	NPN	4801-0000-010
	Integrated Circuits	
IC101	IF	3130-3167-901
IC102	Detector	3130-3157-603
IC103	Audio	3130-3157-614
IC104	Regulator	3130-0000-012
	Diodes	
CR101, 102	Varactor	4809-0000-005
CR103, 104, 105, CR106, 107	Varactor	4809-0000-004
CR108, 109, 110, CR111, 112, 113	Silicon, Power	4806-0000-004
CR114	Zener 8.2V	4808-0000-009
CR115, 116	Silicon	4805-1241-200
	Coils	
L101	Choke, .68 uhy	1802-0688-003
L102	Ant Low Band, Green	1800-5127-401
L103	Choke, 6.8 uhy	1802-0689-003
L104	RF, Low Band, Yellow	1800-5127-402
L105	Choke 12½ turns	1803-5125-903
L106	Ant, High Band, Primary, Brown	1800-3152-001
L107	Ant, High Band, Secondary, Pink	1800-3152-002

ACT-W10 PARTS LIST

Item No.	Description	Part No.
L108	RF, High Band, Orange	1800-3152-003
L109	10.7 MHz IF, White	1800-3191-401
L110	UHF Multiplier	1800-3160-003
L111	Ant, UHF	1800-3160-004
L112	Choke 3½ turns	1803-5125-906
L113	RF, UHF	1800-3160-005
L114	Choke, 15 uhy	1802-0150-003
L115, 117	Choke 820 uhy	1803-3238-600
L116	Choke, 2.2 uhy	1802-0229-003
L118	Quadrature	1800-3151-700
	Resistors	
R161	Variable, 1000 Ohms	4751-0102-005
	Capacitors	
C130, 131, 137	Trimmer 2-6 PF	1517-0000-018
	Filters & Crystals	
XF101	Filter, Crystal, 10.7 MHz	2705-3232-200
CF101	Filter, Ceramic, 455 KHz	2700-3209-500
Y101	Crystal, Second L.O., 10.245 MHz	2301-3151-601
Y101A	Alternate Part, 11.155 MHz	2301-3151-602

ACT-W10 PARTS LIST

DIVIDE BY "N" BOARD

Item No.	Description	Part No.
	Integrated Circuits	
IC501	Logic	3130-3193-505
IC502	Logic	3130-3193-560
IC503, 504	Logic	3130-3157-613
IC505, 506	Logic	3130-3157-612
IC507	Logic	3130-3157-622
IC508	Logic	3130-3193-504
IC509, 510, 511, IC512, 513	Logic	3130-3193-503
IC514	Logic	3130-3157-604
	Coil	
L501	Choke, 5.6 uhy	1802-0569-009

REFERENCE BOARD

	Transistors	
Q401	PNP (White Top)	4801-0000-060
Q402	NPN	4801-0000-010
	Integrated Circuits	
IC401, 402	Logic	3130-3157-608
IC403	Logic	3130-3157-624
IC404, 406	Logic	3130-3157-604
IC405	Logic	3130-3157-610
IC407	Logic	3130-3157-607
	Diodes	
CR401, 402	Silicon	4805-1241-201

ACT-W10 PARTS LIST

Item No.	Description	Part No.
	Capacitors	
C404	Trimmer, 2-18 PF	1517-0000-001
	Crystal	
Y401	Reference, 6.4 MHz	2327-3250-000
	VCO BOARD	
	Transistors	
Q601	FET	4811-0000-025
Q602, 603	PNP (White Top)	4801-0000-060
Q604, 605, 606, Q608, 611	NPN	4801-0000-010
Q607, 610,	FET	4811-0000-020
Q609, 612	NPN (Red Top)	4801-0000-035
	Integrated Circuits	
IC601	Regulator, 5.0V	3130-0000-013
	Diodes	
CR601, 602, CR603, 604	Silicon	4805-1241-201
CR605	Varactor	4809-0000-004
CR606	Varactor	4809-1291-900
	Coils	
L601	Oscillator 4½ turns, Orange	1800-5126-002
L602	Choke 1.8 uhy	1802-0189-003
L603	Oscillator 6½ turns, Blue	1800-5128-001
	Resistors	
R603	Variable, 250 Ohms	4751-0251-005
R611	Variable, 1000 Ohms	4751-0102-005

ACT-W10 PARTS LIST

SCAN BOARD

Item No.	Description	Part No.
	Transistors	
Q301	PNP, (White Top)	4801-0000-060
Q302, 305	NPN	4801-0000-010
Q303	NPN	4801-0000-015
Q304	Unijunction	4813-0000-001
	Integrated Circuits	
IC301	Logic	3130-3157-608
IC302	Logic	3130-3193-501
	Diodes	
CR301	Silicon	4805-1241-200
	Resistors	
R321	Volume, 10K	4752-5107-501
R322	Squelch 7.5K	4752-5107-502
	Switches	
SW301 thru 310	Channel, SPDT	5113-3231-601
SW311	Scan-Man DPDT	5113-3231-901
SW312	Step, SPDT, Spring Return	5113-3231-501
SW313	Off-On, DPDT	5113-3231-901

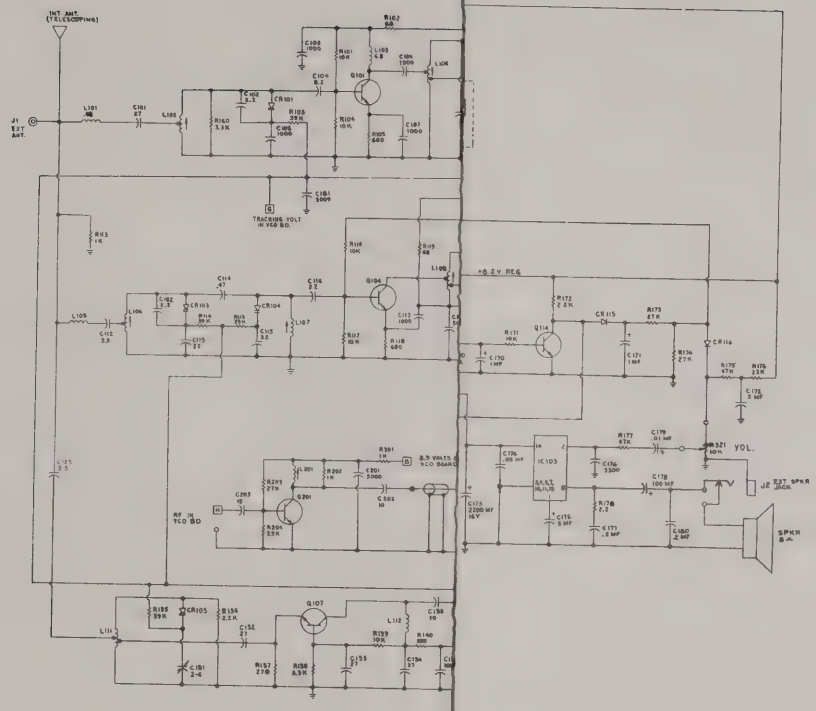
MATRIX BOARD

CR701 thru 899	Germanium	4807-1305-800
CR900	Silicon, Power	4806-0000-004

ACT-W10 PARTS LIST

BUFFER BOARD

Item No.	Description	Part No.
	Transistors	
Q201	NPN (Red Top)	4801-0000-035
	Coil	
L201	Buffer	1800-5126-001
	Miscellaneous	
T_1	Transformer, Power	5604-5126-700
	Speaker, 8 Ohm	1301-3236-000
	Knob, Volume & Squelch	2402-3167-002
	Knob, Slide Switch, Blue	2402-6039-705
	Knob, Slide Switch, Black	2402-6039-704
	Bumper, Rubber	1401-0000-001
	Wrap Assembly	7025-1094-300
	Front Panel	1405-6042-200
	Antenna, Telescope	1201-5108-801
	Directory, Frequency, Comb	7002-1093-700



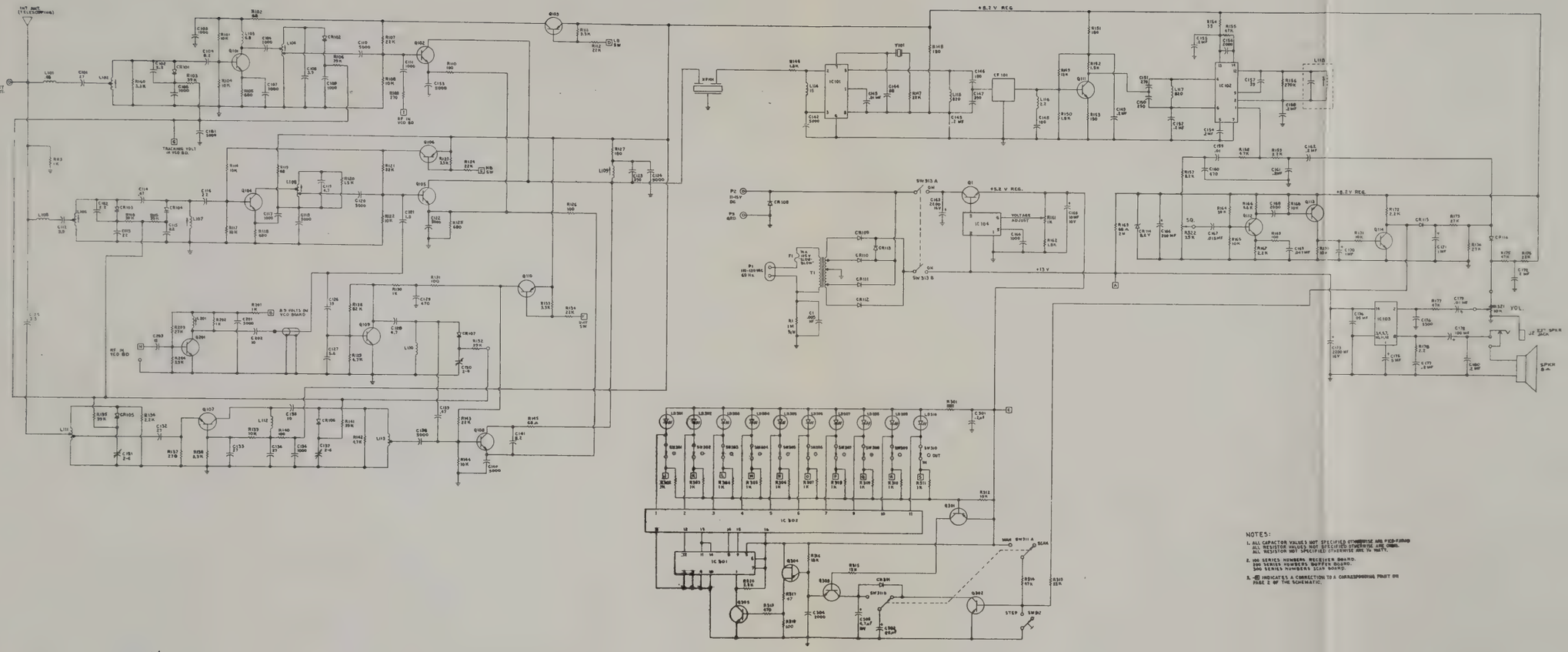
PECIFIED OTHERWISE ARE PICO-FARAD
PECIFIED OTHERWISE ARE OHMS.
OTHERWISE ARE ½ WATT.

VER BOARD.
ER BOARD.
BOARD.

TO A CORRESPONDING POINT ON

IC-104

MFC 6033A

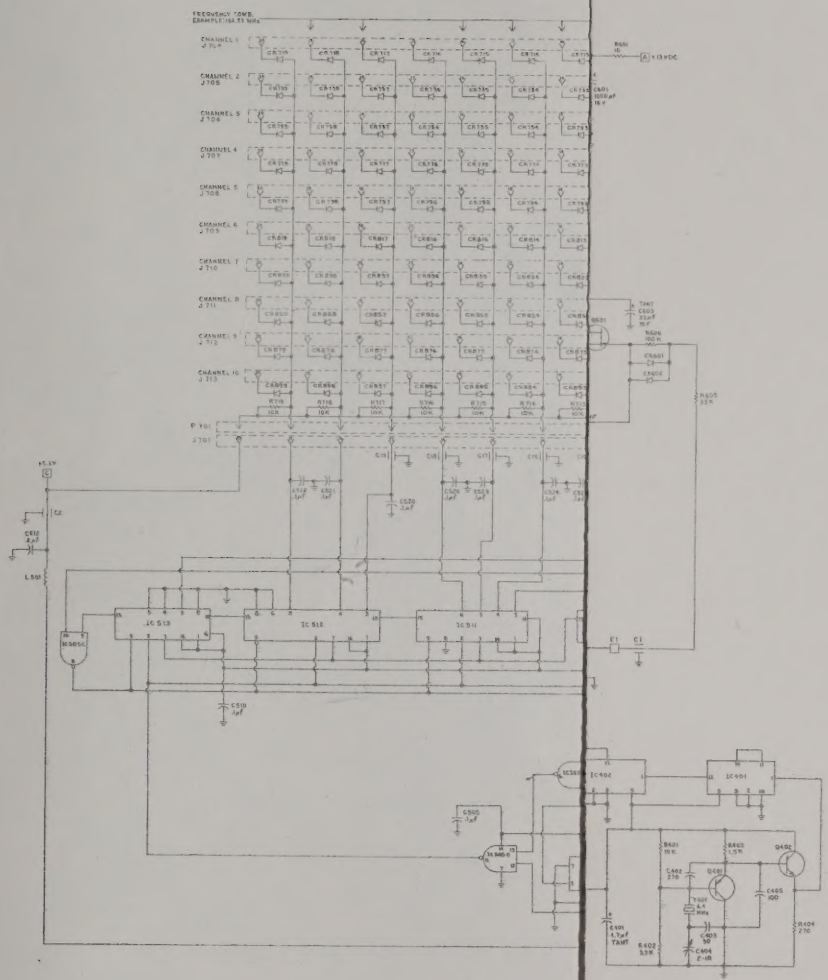


NOTES:

1. ALL CAPACITOR VALUES NOT SPECIFIED OTHERWISE ARE MICRO-FARADS
   ALL RESISTOR VALUES NOT SPECIFIED OTHERWISE ARE OHMS.
   ALL RESISTOR NOT SPECIFIED OTHERWISE ARE ¼ WATT.
2. 100 SERIES NUMBERS RECEIVER BOARD.
   200 SERIES NUMBERS BUFFER BOARD.
   300 SERIES NUMBERS SCAN BOARD.
3. ⓐ INDICATES A CONNECTION TO A CORRESPONDING POINT ON PAGE 2 OF THE SCHEMATIC.

IC-104
MFC 6033A

ACT-W10 SHEET 1 OF 2

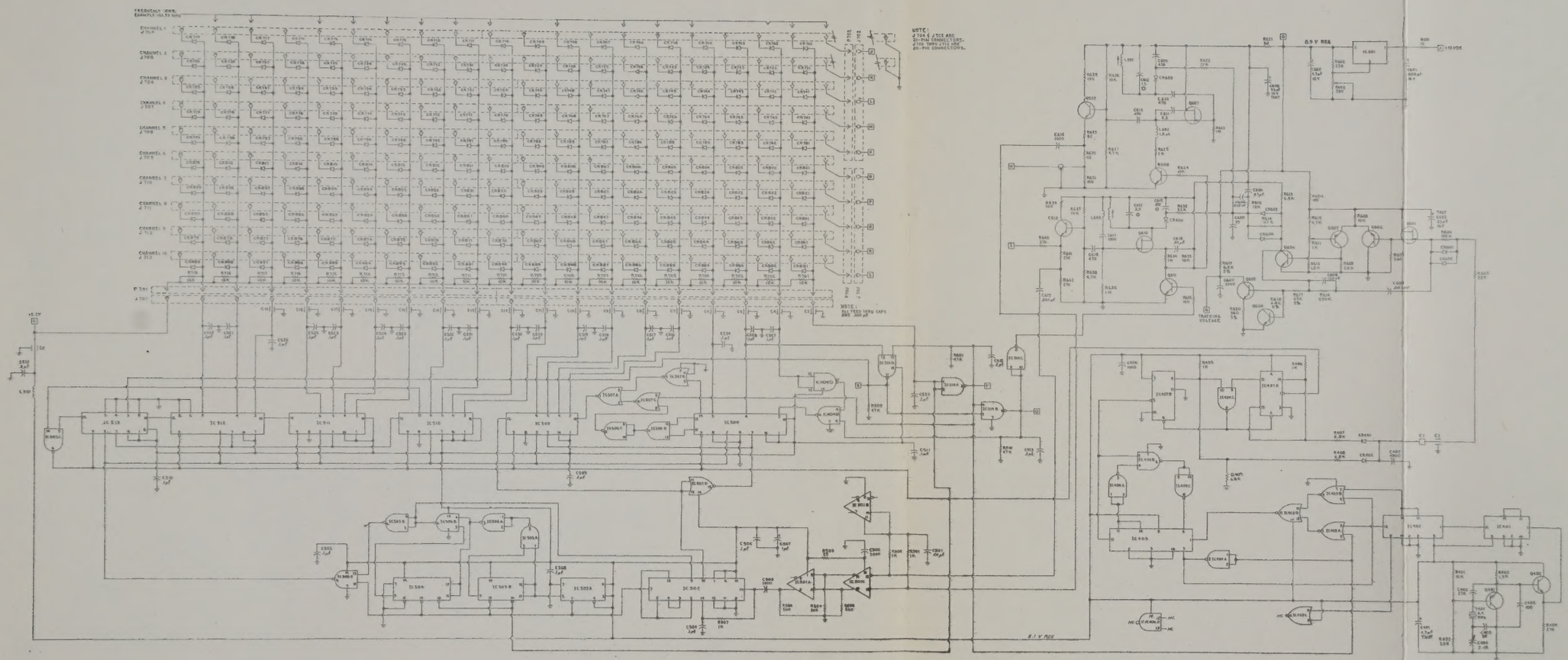


E SPECIFIED OTHERWISE ARE PICO-FARAD.
E SPECIFIED OTHERWISE ARE OHMS.
IED OTHERWISE ARE 1/4 WATT.

ERENCE BOARD.
BOARD.
BOARD.
MATRIX BOARD.

TO A CORRESPONDING POINT ON PAGE 1 OF THE

EAD PLACED ON A COMPONENT LEAD.



NOTES:

1. ALL CAPACITOR VALUES NOT SPECIFIED OTHERWISE ARE PICO-FARAD.
   ALL RESISTOR VALUES NOT SPECIFIED OTHERWISE ARE OHMS.
   ALL RESISTORS NOT SPECIFIED OTHERWISE ARE ¼ WATT.
2. 400 SERIES NUMBERS: KEYBOARD BOARD
   500 SERIES NUMBERS: SYNC BOARD
   600 SERIES NUMBERS: VCO BOARD
   700 & 800 SERIES NUMBERS: MATRIX BOARD.
3. [A] INDICATES A CONNECTION TO A CORRESPONDING POINT ON PAGE 1 OF THE SCHEMATIC.
4. —◯— DENOTES A FERRITE BEAD PLACED ON A COMPONENT LEAD.

ACT-W10 SHEET 2 OF 2